

PROJECT IDENTIFICATION SHEET PROPOSED PROJECTS ON EMIGRANT CREEK RANGER DISTRICT

PROJECT TITLE: Loco Thin Wildfire Resiliency Farm Bill CE Project

PROJECT LEAD: Matt Cawlfeld

PROJECT NEPA COORDINATOR: Melissa Ward and Lori Bailey

PROJECT DESCRIPTION: This project will be completed under the Wildfire Resilience CE but would also reduce the risk or extent of insect and disease infestation. Hazardous fuels would be reduced by reducing stocking levels to the lower management zone for ponderosa pine as recommended by Powell (1999) and Cochran and others (1994) on 3,000 acres or less. Standing dead trees would also be removed to reduce hazardous fuels. Thinning would occur throughout the diameter range (up to 21" DBH for all species) and would remove most of the understory, favoring ponderosa pine over Douglas-fir and grand fir between the overstory groups, and leaving replacement trees for the declining overstory. Basal areas would range from 40-60 square foot per acre. Harvest-generated logging slash would either be removed to the landing through whole tree yarding or if cut-to-length logging methods are used, machine and/or hand piled and burned in the unit.

PROJECT OBJECTIVES: Reduce hazardous fuels and reduce the risk or extent of insect and disease infestation.

MANAGEMENT CODE:

EXPECTED TIMING: Implementation 2020

PROJECT LOCATION: West of highway 395 and east of Forest Road 37, within and near insect and disease pockets in the Flat, and Silvies Project areas. Project will be 3,000 acres or less. See attached map.

LEGAL DESCRIPTION:

T 18 S, R 30 E, Section 23

T 18 S, R 31 E, Sections 19, 20, 29, 30, 31, 32

T 19 S, R 31 E, Sections 5, 7, 8, 9, 10, 15, 16, 17, 18, 20, 21, 22

T 19 S, R 30 E, Sections 13, 23, 24, 25, 26, 35, 36

SUB-BASIN: Silvies

WATERSHED: Middle and Upper Silvies

SUBWATERSHED: Myrtle Creek, Flat Creek-Silvies River, Stancliffe Creek-Silvies River, Sagehen Creek-Silvies River, Dog Creek-Silvies River.

COUNTY: Approximately 1,816 acres in Harney County and 1,016 acres in Grant County

FOREST PLAN LAND ALLOCATIONS:

1,909 acres - MA-1/2 General Forest/Range

642 acres - MA-4A Big Game Winter Range

266 acres - MA-14M Visuals- Middleground

14 acres – RHCA (Riparian Habitat Conservation Area)

Revised: 4/7/2020

REVIEW FOR EXTRAORDINARY CIRCUMSTANCES

The following resource specialists have reviewed this proposal to determine if there may be "significant and adverse impacts" to the following resource conditions:

Resource Condition	Are They Present? Specialist/Date	Are There Extraordinary Circumstances? Determination/Citation
Federally listed threatened or endangered species or designated critical habitat: Aquatics, Terrestrial, Plants	No Aquatics No Plants No Terrestrial /s/ Lori Bailey 03/20/2020	No effects to Northern Bald eagle and Gray wolf. Refer to Project BE/BAs.
Species proposed for Federal listing or proposed critical habitat: Aquatics Terrestrial Plants	No Aquatics No Plants No Terrestrial /s/ Lori Bailey 03/20/2020	No species proposed for Federal listing or proposed critical habitat occur within the project area. Refer to Project BE/BAs.
Forest Service sensitive species Aquatics Terrestrial Plants	Yes Aquatics No Plants Yes Terrestrial /s/ Lori Bailey 03/20/2020	White-headed woodpecker, pallid bat, Townsend's big-eared bat, fringed myotis, shiny tightcoil, Western bumble bee, redband trout, Columbia spotted frog, and Western ridged mussel - May Impact Individuals or Habitat but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Refer to Project BE/BAs.
Flood plains, wetlands, or municipal watersheds.	No /s/ Lori Bailey 03/15/2020	No municipal watersheds, wetlands or floodplains are present within the project area. INFISH RMOs would not be retarded.
Congressionally designated areas such as wilderness, wilderness study areas, or National Recreation areas.	No /s/ Lori Bailey 03/15/2020	No impacts to congressionally designated areas such as wilderness, wilderness study areas, or National Recreation areas because none are present.
Inventoried Roadless Areas.	No /s/ Lori Bailey 03/15/2020	No impacts to inventoried roadless areas because none are present.
Research Natural Areas	No /s/ Lori Bailey 03/15/2020	No impacts to research natural areas because none are present.
American Indians and Alaska Native religious or cultural sites.	No /s/ Lori Bailey 03/15/2020	No known American Indian or Alaska Native religious or cultural sites are present. Monitoring will occur as needed.
Archaeological sites, or historic properties or areas.	YES /s/ Lori Bailey 03/15/2020	Archaeological sites and historic properties are present but sites would be avoided therefore there is a low degree of potential effects. Monitoring will occur as needed.

Finding: I have considered the above review and find (check one):

☒ It has been determined that there are no applicable extraordinary circumstances that might significantly affect the environment, as described in Forest Service Handbook 1909.15, Ch. 30, sec. 30.0, 2 (a-g).

☐ Extraordinary circumstances may be present in the project area. This proposal requires further NEPA documentation in an EA or EIS.

 District Ranger	 Date
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INTERDISCIPLINARY COORDINATION PLAN

Route the project description and this coordination plan to all resources that would be affected by the proposed project. Indicate resource shops where coordination would be necessary.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Botany/Weeds | <input checked="" type="checkbox"/> Cultural Resources |
| <input checked="" type="checkbox"/> Engineering/ Transportation | <input checked="" type="checkbox"/> Fuels |
| <input checked="" type="checkbox"/> Range | <input checked="" type="checkbox"/> Recreation/Visuals |
| <input checked="" type="checkbox"/> Resource Planning/NEPA | <input checked="" type="checkbox"/> Silviculture |
| <input checked="" type="checkbox"/> Soils/Hydro | <input checked="" type="checkbox"/> Timber/Logging Systems |
| <input checked="" type="checkbox"/> Water Quality/Fisheries | <input checked="" type="checkbox"/> Wildlife |

IT IS VERY IMPORTANT FOR RESOURCE SPECIALIST USING THIS COORDINATION PLAN TO:

1. Document your concerns (Note: If there will be no impact, indicate "no impact" and explain why no impact is expected. Sign - don't leave it blank).
2. List mitigation necessary to avoid adverse impact.
3. If applicable, identify the need for further coordination.
4. Provide your signature on the following pages
5. Refer to dates of submitted reports

CULTURAL RESOURCES:

The project should have no effect on known cultural resources that are eligible or potentially eligible for inclusion on the National Register of Historic Places (NRHP). The identified cultural resource sites will be protected through avoidance or other mitigation activities (e.g, hand thinning).

Cultural resource inventory surveys and reconnaissance have not yet been fully completed. There are about 300 acres of survey left to be completed which will be completed prior to project implementation. With the design criteria the project conforms to those federal laws and guidelines for the protection of NRHP-eligible or unevaluated sites. The project would not adversely affect districts, sites, highways, structures, or objects listed in, or eligible for, listing in the NRHP or cause loss or destruction of significant scientific, cultural, or historical resources (40 CFR 1508.27(b)(8)). Clearances under Section 106 of the National Historic Preservation Act are being processed under the terms of the 2004 Programmatic Agreement with the Oregon State Historic Preservation Office. The forest is using a phased approach to Section 106 consultation for this project because it is a large land area (36CFR800.4(b)(2)). The cultural resources inventory report will be completed and submitted to the Oregon SHPO under the terms of the 2004 Programmatic Agreement between Region 6 and the Oregon SHPO.

Cumulative Effects:

There would be no cumulative effects to heritage resources because all sites that are eligible or potentially eligible for inclusion on the National Register of Historic Places (NRHP) would be avoided.

MITIGATION MEASURES NEEDED:

- Under the terms of the Management Strategy for the Treatment of Lithic Scatter Sites (Keyser et al. 1988), noncommercial thinning by hand and chainsaw is an appropriate silvicultural treatment and low broadcast burning or "lop and scatter" of slash rather than burning it are appropriate fuels treatments within lithic scatter sites.
- Under the terms of the Management Strategy for the Treatment of Lithic Scatter Sites (Keyser et al. 1988), Logging the site over snow is an appropriate treatment within lithic scatter sites when there are appropriate ground conditions to protect the site (i.e., at least 20 inches of snow and overnight temperatures of less than 25 degrees (F.) and afternoon temperatures less than 35 degrees (F.) using existing skid trails, and employing cultural resource monitors on the site). An over-snow logging plan would have to be completed and approved by the SHPO prior to implementation.
- Archaeological sites will be identified as Areas to Protect (ATPs) during all commercial timber harvesting, and/or the boundaries of the harvest unit will be configured so that they do not include sites.
- Eligible and potentially eligible sites will be avoided when establishing temporary roads and landings. Previously disturbed temporary road routes and landing sites within site boundaries may be reused if approved by the District Archaeologist.
- There will be no piling, hand or with ground-based machines, within any boundaries of a site; all hand piling and burning of slash or fuel concentrations will take place outside the site boundaries.
- If cultural resources are located during implementation, work will be halted and the District Archaeologist will be notified. The cultural resource will be evaluated, and a mitigation plan developed in consultation with the Oregon State Historic Preservation Office (SHPO), if necessary.
- Road maintenance activities such as hazard tree removal and ground disturbing activities outside the road prism (previously disturbed roadbed, ditches, cut slope and fill slope), such as widening of roadbed and constructing of drainage features, should avoid eligible and potentially eligible cultural resources.
- If a cambium peeled tree is identified as a safety hazard it will be removed in consultation with the Tribe.

Signature *Alyson Krahl*

Date February 25, 2020

WILDLIFE:

Threatened, endangered, proposed and sensitive (TEPS): Threatened, endangered, proposed and sensitive (TEPS) terrestrial wildlife species were analyzed in a biological evaluation. Refer to the Wildlife BE/BA in the Project record for more information. The following TEPS species have potential habitat or documented occurrences in the affected subwatersheds: gray wolf, bald eagle, Lewis' woodpecker, white-headed woodpecker, fringed myotis, pallid bat, Townsend's big-eared bat, Western bumble bee and shiny tightcoil.

The Loco project would have No Effect to gray wolf because (1) habitat modification to big game cover is minor and would not affect big game distribution; (2) minor impacts to big game or big game habitat, therefore no impacts to wolf prey base; (3) there are no potential wolf denning or rendezvous sites in the area; and (4) no wolves have been documented in Loco project area.

The Loco project would have No Effect to bald eagles because (1) no treatments are proposed within the nest stand near the Silvies River; (2) seasonal restrictions and/or monitoring will occur for units near nesting area and along Silvies River so no disturbance to nesting birds would occur; (3) it is unlikely trees harvested would impact any potential roost or perch tree; (4) no impacts to foraging habitat along the Silvies River would occur and no impacts to potential prey for bald eagles is expected.

The Loco project would have No Impact to Lewis' woodpecker because (1) existing snag habitat would not be impacted to any measurable amount that would affect existing habitat for this woodpecker; (2) approximately 125 acres of potential secondary Lewis's woodpecker habitat exists in the project area but less than one acre would have harvest activity; (3) habitat for this fire dependent woodpecker would be enhanced in the mid to long term.

The Loco project may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIIH) for the short term and a beneficial impact (BI) for the mid to long term for White-headed woodpeckers because (1) nest abandonment is likely when harvest operations occur during nesting period; (2) incidental loss of large trees and loss of snags would occur during harvest operations; (3) loss of some foraging habitat is likely; (4) approximately 895 acres of 13,290 acres of primary habitat (~7%) would receive fuels reduction treatment; (5) a more resilient forest structure benefits this woodpecker because they rely on old growth ponderosa pine for foraging habitat and future snag recruitment.

The Loco project may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIIH) for all sensitive bat species, pallid, fringed myotis, and Townsend's big-eared bat because (1) roosting habitat could be incidentally impacted due to snag removal; (2) foraging habitat could be improved due to the open conditions created by thinning; (3) no riparian or potential watering sources such as dugout ponds would be impacted.

The Loco project may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIIH) for the short term and a beneficial impact (BI) for the mid to long term for western bumble bee's because (1) bees are ground nesters and extraction of logs could impact a nest by skidding logs over the nest site; (2) some flowering plants providing nectar could be damaged during logging operations; (3) reducing conifer densities allows more light on the forest floor, which can produce more flowering plants benefitting pollinators like bees.

The Loco project may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIIH) for shiny tightcoil because (1) harvesting and skidding of logs could crush downed logs where tightcoils may occur; (2) since riparian buffers would occur, the likelihood of impacting this snail is considerably reduced.

Management Indicator Species (MIS): Three-toed woodpecker and American marten do not have habitat in the project and would not be impacted by the proposed actions. Rocky mountain elk are addressed in the big game section. Management Indicator Species impacted by the proposed project are primary cavity

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excavators. The following is a summary table of the amount of habitat acres impacted or improved by the proposed project.

MIS Habitat acres impacted by Loco Project					
MIS	Acres habitat in project area*	Acres of habitat treated	% of habitat treated	Impacts to nest habitat	Impacts to foraging habitat
PIWO	4,530	265	6	--	--
BBWO	13,325	645	5	--	--
HAWO	21,250	1,575	7	+-	-
RNSA	~1,000	30	3	++	+-
WISA	11,935	1,040	9	+-	+-
NOFL	12,340	966	8	+-	++
Piwo=pileated, bbwo=blackback, hawo=hairy; msa=red-naped, wisa=Williamson's sapsuckers; nofi= northern flicker. -- are negative impacts, ++ are positive, +- is mixed impacts. * project area includes seven sub-watersheds.					

Primary Cavity Excavators (PCE): Pileated, blackback, and hairy woodpecker habitats can be impacted with commercial thinning. Disturbance from operations can displace birds and depending on the time of year can cause nest abandonment. Hairy woodpeckers could benefit from edge effect created from the thinning operations. Because over 85 percent of the habitat within the project area would be left un-treated, the impacts are minor to these species. The amount insect mortality in the un-treated stands is expected to provide snag habitat for nesting and an abundance of forage.

Red-naped and Williamson's sapsuckers use riparian areas for nesting and drill sap wells in ponderosa pine and Douglas fir trees. Approximately 60 acres of aspen would be improved through commercial thinning but more aspen restoration projects are expected to occur in the near future. Williamson's sapsucker prefer more open stand structure and habitat improvements could occur from commercial thinning. Williamson's nests were found during field surveys and nest protection in addition to seasonal restrictions would be applied to protect nesting area.

Northern flickers are habitat generalist and approximately eight percent of their habitat would be impacted by commercial thinning. Habitat, especially foraging habitat would be improved since this bird forages on mast like chokecherry and currant. Mast producing shrubs are expected to be enhanced in some of the treatment units where canopy is opened enough for shrub development.

Loco project is not expected to contribute to a negative trend in viability for MIS primary cavity excavators. Insect and disease mortality are expected to continue within the watershed and provide adequate snags even though some mortality would be captured and utilized commercially.

Snag Habitat: Snag inventories were conducted by wildlife field crews in 2015 using belt transects as described in Bate et. al (2000). These surveys indicated a slight snag deficit in open and small/medium stand structure within the ponderosa pine Douglas-fir wildlife habitat types. However, since the surveys were completed, tussock moth (*Orgyia pseudotsugata*) outbreaks (last 4 years) have caused substantial increase in Douglas fir mortality along with some mortality from western pine beetles. This current mortality has created an abundance of snag habitat for cavity nesting birds and other wildlife that require snag habitat.

In 2014 snag components of habitat were determined using GNN data and the Decayed Wood Advisor (DecAID) tool. DecAID is a web-based synthesized dataset of the best available research on dead wood. DecAID integrates current research on wildlife use of dead wood (snags, logs, and down wood) in various habitat types (Mellen-McLean et al. 2014). Figures below were computed from 2014 data within the Upper Silvies River watershed. Due to previous disturbances and stocking rate densities, the watershed distribution of snags was adequate before the current (2017-2019) pestilent outbreak. 2014 data shows snag densities are above the 50% tolerance level for ponderosa pine/Douglas fir plant associations in all structure types. Because of the recent mortality (2017-2019) and because most of the area is considered dry ponderosa pine, snag levels are expected to be adequate for wildlife adapted to this environment. Additionally, there are several mixed conifer stands (1,770 acres) within the Loco project area that would not be treated. These stands have insect activity associated with fir engravers (*Scolytus ventralis*) based on current data from aerial flights (see vegetation report, Cawfield), would not be treated, and would therefore provide additional snag habitat.

Figure 2a. Upper Silvies River Watershed
Ponderosa pine/Douglas-fir Wildlife Habitat Type; Large Snags >20"
Comparison of reference and current conditions

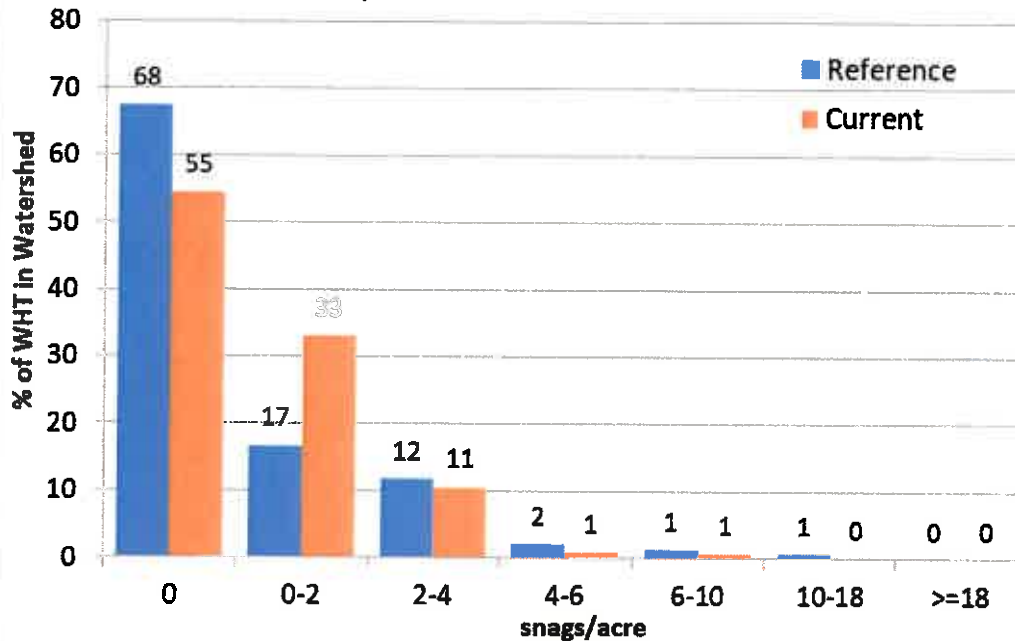
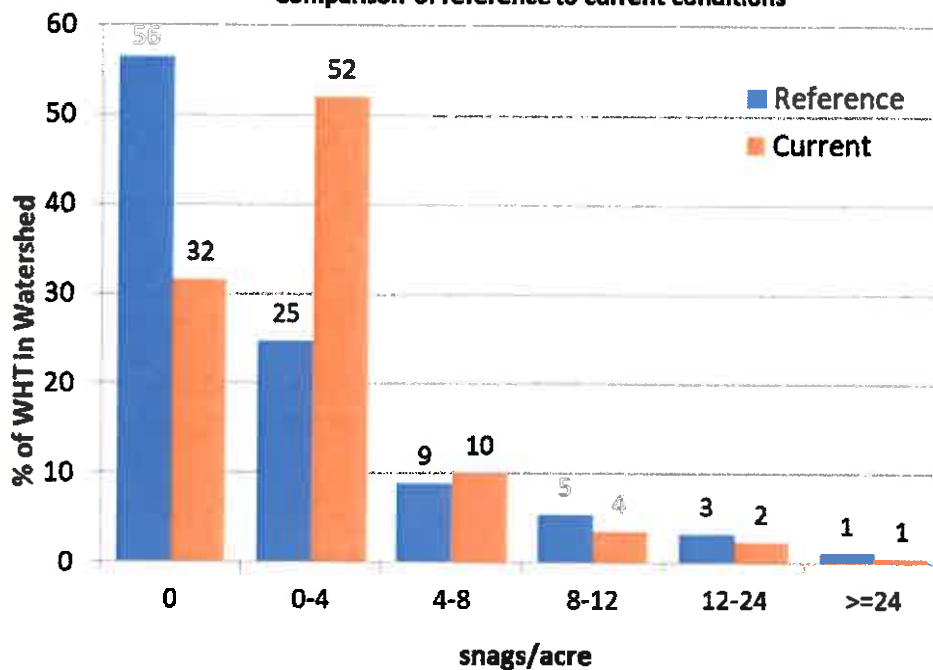


Figure 2b. Upper Silvies River Watershed
Ponderosa pine/Douglas-fir Wildlife Habitat Type; Small Snags (>10")
Comparison of reference to current conditions



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Snag removal would occur within each unit where mortality occurs. Snag habitat is abundant in the project area, watershed and across the entire Emigrant Creek Ranger District due to the recent insect/disease mortality (refer to the silviculture section for more details). Within each treatment unit, at a minimum, snags would be left in patches at forest plan standards (see design criteria). However it is likely that snags will be left at higher densities than forest plan standards because the entire snag patch would be left. Small snags (snags that do not meet USFS R6 utilization standards) would also be left within each unit. Capture of future tree mortality would occur on the proposed 3,000 acre treatment blocks, but the remaining surrounding area is expected to contain good snag densities. Snag habitat would be minimally impacted at the watershed level scale.

Big Game: Malheur National Forest cover standards would be met within all subwatersheds where current conditions meet standards. Satisfactory cover in the summer ranges of Myrtle, Standliffe, and Sagehen Creek sub-watersheds are currently below Malheur Forest Standards and no treatments are planned within these areas that would reduce satisfactory cover. There would be no enhancement of elk security because there are no proposed road treatments that would limit disturbance from motorized vehicle traffic. There would be approximately 90 acres of hiding cover reduction in a 320 acre security area near Jack Andy Creek drainage within treatment units 3 and 5. Hiding cover reduction is likely to reduce the effectiveness of security and could displace elk elsewhere, including onto private property adjacent to harvest block.

Minor disturbance and displacement of big game is likely during operations. Disturbances are localized around the harvest units and haul routes and are expected to be short term. Increase in vulnerability is likely especially for mule deer from a reduction in hiding cover. After harvest, some of the non-merchantable trees left in the units may conceal animals and provide some level of hiding cover for a short period (3-5 years) until the units are precommercially thinned. After the units are precommercially thinned, piled and burned, hiding cover will be reduced. Additionally, after the area is prescribed burned under the Silvies Canyon EIS and Flat EA, hiding cover may be further reduced. For more in depth analysis for big game refer to the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA.

Minimal impact to big game habitat is expected (mainly a reduction in hiding cover and displacement during implementation). No affect to mule deer or elk populations is expected from implementation of Loco project. Loco project is not expected to contribute to a negative trend in viability for big game MIS.

Old Growth and Replacement Old Growth: No designated old growth (DOGs) or replacement old growth stands are proposed for treatment in the Loco project therefore there should be no effects to DOGs and ROGs.

Late and Old Structure (LOS) and Connectivity: There is approximately 660 acres of LOS (Late old structure) stands within the Loco project area. About 80 acres would receive treatment. Treatments would not remove live trees over 21 inches dbh therefore there would be no reduction in LOS stands. Reducing stem densities would aid in retention of existing large old growth trees. There would be a reduction in complexity of the stands treated because of the canopy reduction and overall stems being cut and removed. Proposed treatment would enhance habitat for avian species like white-headed woodpeckers (Sensitive and a MIS species), white-breasted nuthatches, and pygmy nuthatches.

Approximately 2,445 acres of designated connectivity corridors was identified within the Loco project area. Connectivity can provide diversity on the landscape; however connectivity corridors can also aid potential for pestilence avenues and fire spread because the vegetation in these areas are left at higher densities. About 270 acres of designated connectivity corridor would receive treatment with most of the treatment occurring in unit 2, which is a 432-acre unit. This connectivity corridor was designed to be wider than the minimum width (400 feet) in most areas because the corridor follows stand boundaries. Because of the width of corridor, and design criteria specific to unit 2, impacts to this connectivity corridor would be minimized by leaving the vegetation densities within the corridor at 2/3rd site potential. Design criteria include, leaving additional snag patches and no pre-commercial thinning would occur within the connectivity corridor.

Featured Species: All featured species would have protection measures or habitat modifications that comply with Forest Plan direction and amendments to the forest plan. Proposed units in the southern portion of the project near the forest boundary would improve habitat for pronghorn antelope. As tree canopy is more open a more diverse plant composition is likely and would benefit pronghorns.

Loco project has the potential to reduce potential Dusky (Blue) grouse roost trees but would help preserve remaining Douglas-fir trees for future roost and winter habitat. Because winter roosting habitat (live Douglas-fir

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trees infected with mistletoe) would be left on upper slopes and tops of ridges there would be no measurable impacts anticipated to potential winter roost trees from the proposed thinning treatments. Foraging habitat could be improved as more shrubs would be enhanced by commercial thinning. No blue grouse have been documented in proposed project area but grouse have been recorded within ¼ mile of project in adjoining watershed. Habitat exists throughout project and winter roosting is probable on ridges.

Northern goshawks were surveyed in 2015 and from 1996-2002. Two nesting territories occur within the Loco Project area. No treatment are proposed within the known goshawk nest stands as required by the Regional Foresters Amendment #2. Approximately 140 acres of goshawk PFA for one of the nest sites in the Hall Creek drainage would receive treatment. About 40 acres of those acres are within an aspen stand, and proposed treatments (conifer reduction) will enhance aspen in the future. Based on vegetation modeling there is approximately 5,760 acres of primary goshawk nesting habitat and 3,685 acres of secondary habitat in the Loco project area. Proposed activities would commercially thin 330 acres of primary habitat and 205 acres of secondary which is about six percent of both primary and secondary. Treatment would not affect overall nesting habitat and help sustain future nesting habitat. Due to the high insect mortality throughout the project area and district, snag habitat would be sustained and subsequent woodpecker and other prey species for goshawks would be maintained in the future. Loco project would not affect the viability of northern goshawks. Protection measures with season restrictions would apply where active goshawk occurs.

Neo-tropical Migratory Birds: The migratory birds of concern that could occur in the project area was reviewed. Some of the birds were addressed in the Biological Evaluation, MIS, and Featured Species section of this report. The following birds were not previously addressed and could be impacted by the proposed projects: flammulated owls, olive-sided flycatchers, Cassin's finch.

Flammulated owls are considered focal species in Rocky Mountain Region for old forest with grassy openings and thickets for roosting. This bird needs large snags for nesting as it is a secondary cavity nester. Large snags, where possible would be avoided and could be potential nesting habitat for this owl. Benefits may occur where openings in ponderosa pine stands are created, which may enhance grassy openings preferred by this owl for foraging on insects. Incidental removal of large ponderosa pine danger trees could negatively impact and disturbance during the nesting period, can cause nest abandonment.

Olive-sided flycatchers prefer habitat with snags in edge habitat where disturbance has occurred in open stands to hawk insects. Application of the fire or wildfires that burn in various intensities would be the most preferred habitat, but with the endemic of insect mortality habitat may be created in parts of Loco project. However, with vegetation treatments from Loco combined with the application of prescribed fire by the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA, habitat may be created for this flycatcher of concern. Incidental removal of large ponderosa pine danger trees could negatively impact and disturbance during the nesting period, can cause nest abandonment.

Cassin's finches also prefer open ponderosa pine forests to forage on grass seeds and pinecone seeds. Thinning of conifers would benefit this bird of concern by increasing forage sources of grass and cone production by thinning fir trees. Reducing fir composition would benefit this neo-tropical bird. Incidental removal of large ponderosa pine danger trees could negatively impact and disturbance during the nesting period, can cause nest abandonment.

Unique Habitats: Since no planned treatment units are in riparian areas no direct impacts are expected. Wet areas such as springs and seeps would be buffered from thinning and no equipment is expected to operate in these sensitive areas, so no impacts would occur to these habitat features. Approximately 60 acres of aspen are within proposed units and treatments would benefit aspen by reducing competition and allowing more light and moisture for the aspen. Proposed units adjacent to meadows such as Craddock Meadows in the Boulder Creek drainage may improve meadow habitat by removing encroaching trees, but would also modify edge habitat. Units 9, 10, and 22 are adjacent to meadow habitat.

Signature *Roy Sutcliffe*

Date March 15, 2020

WATER QUALITY/FISHERIES:

Refer to the Aquatics BE/BA dated 02/18/2020.

Redband trout, Columbia spotted frog, and Western ridged mussel are sensitive species known or expected to occur in the project area and are analyzed further.

There would be no cutting or harvesting in RHCAs and springs would be buffered 100 feet. Trees may be felled in RHCAs when they pose a safety risk. Felled trees will be kept on site. There is potential for impacts to aquatic organisms via sedimentation effects from potential stream crossings, temporary roads, and native surface roads used for haul. Project design criteria (attached to CE) will be followed, so effects are expected to be insignificant.

Cumulative effects from projects include Marshall Devine HFRA EA prescribed burning activities, Flat Vegetation Management EA prescribed burning activities, Silvies Canyon EIS prescribed burning activities, and ongoing grazing activities. Other projects may have been completed, but effects were not considered because they do not overlap in time and space. Cumulative effects are expected to be insignificant due to project design criteria and Malheur Forest Plan standards associated with those projects. The overall effects on habitat and species would be insignificant at the scale of the Forest. As such, the implementation of this project **may impact individuals, but not likely to result in a loss of viability in the planning area, nor contribute to a trend toward federal listing (MIIH).**

MITIGATION MEASURES NEEDED:

Refer to the project design criteria in the project record.

Signature *Sophia Kim*

Date 02/18/2020

BOTANY/WEEDS:

No documented TESP species within or adjacent to project units, no impact to documented sensitive species and no protection necessary.

There is a small amount of sensitive habitat, scablands and springs, inside the planned units, but the project design criteria should provide the protection from ground disturbance that these sites need.

In the dry coniferous forest area with ground disturbance the determination is MIIH (May Impact Individuals or Habitat) for any potential sensitive microhabitats or undocumented TESP species occurrences. However, in the aforementioned sensitive habitats if no ground disturbance occurs there would be NI (No Impact) to the habitat or any species potentially occurring there. The determination for the Idaho sedge sites located nearby would also be NI.

Refer to Plant BE dated 02/18/2020.

INVASIVES:

There are a number of fairly isolated invasive plant sites scattered around the project area but no documented sites that are large or pervasive. Standard PDCs would be used to prevent the spread of weeds due to the project actions, and the 2015 Malheur Invasives ROD will remain ongoing during this project, inventorying and treating weeds throughout this and other areas on the forest.

This CE is tiered to a broader scale analysis (the Pacific Northwest Region Final Environmental Impact Statement for the Invasive Plant Program, 2005, hereby referred to as the R6 2005 FEIS). The R6 2005 FEIS culminated in a Record of Decision (R6 2005 ROD) that amended the Malheur National Forest Plan by adding management direction relative to invasive plants. This project is intended to comply with the new management direction.

This project overlaps spatially and temporally with portions of the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA. There would be no cumulative effects to documented TESP sites because none have been found in the Loco project area. Cumulative effects to sensitive habitat, undocumented TESP species occurrences, scablands and springs, and invasive species would be minor due to design criteria.

MITIGATION MEASURES NEEDED:

Refer to the project design criteria in the project record.

Signature *Lisa Foster*

Date 02/18/2020

SOILS/HYDRO:

Soil Mapping Unit Descriptions

- 3** – Riparian soil occurs along stream bottoms and other wet areas. Surface soils are mixed silt loams, loams, clay loams, and clay and are high in organic matter. Soil gradients are from 0 to 15%. Soil depth is greater than 24 inches
- 7** – Poorly formed, unconsolidated, non-forested soil found on south facing slopes with gradients from 15 to 100% and less than 15 inches deep.
Shallow loamy to loamy clay soils with very limited plant available water. Soils are ash-derived with high infiltration rates and high water holding capacity. Are stable if vegetative cover is maintained, become highly susceptible to wind and water erosion if vegetative cover is removed or broken up.
- 8** – Poorly formed, unconsolidated, soil found on south facing slopes with gradients from 15 to 100% and less than 15 inches deep. Loamy to loamy clay soils.
- 41** – Upland soil that occurs on upland flats and slopes with a south aspect and gradients less than 30%. Well to moderately drained gravelly clay loam derived from basalt, andesite, and tuffaceous material. Gravel and cobble content ranges from 20 to 60%, increasing with depth. Soil depth is 12 to 30 inches. Surface rock fragments range from 10 to 30%.
- 43** – Upland soil on steep south facing slopes with gradients from 30 to 70%. Well drained gravelly loam and clay loam derived from basalt and andesite with moderate permeability. Gravel and cobble content ranges from 20 to 60% and increases with depth. Soil depth ranges from 12 to 30 inches. Surface rock fragments range from 10 to 30%.
- 44** – Upland soil occurring on steep sideslopes with gradients of 30 to 70%. Excessively drained gravelly and cobbly loam with moderate permeability. Gravel and cobble content ranges from 30 to 60%. Soil depth ranges from 8 to 15 inches. Surface rock fragment ranges from 40 to 60%.
- 46** – Upland soil that occurs on upland flats and sideslopes with gradients of less than 30%. Excessively drained gravelly and cobbly loam derived from basalt and andesite with moderate permeability. Gravel and cobble content ranges from 30 to 60%. Soil depth ranges from 8 to 15 inches. Surface rock fragment ranges from 30 to 60%.
- 47** – Upland soil that occurs on upland flats and sideslopes with gradients of less than 30%. Excessively drained very gravelly and cobbly loam derived from basalt and andesite. Gravel content ranges from 30 to 70%. Soil depth ranges from 4 to 12 inches. Surface rock fragments range from 40 to 90%.
- 48** – Upland soil that occurs on upland flats and sideslopes with gradients of 30 to 70% and variable aspect. Well drained, ash-derived silt loam surface soil with rapid permeability. Subsurface horizons are gravelly to cobbly loam and clay loam derived from weathered basalt, andesite, and tuffaceous materials. Gravel and cobble contents ranges from 30 to 50% and increases with depth. Surface soil is 6 to 12 inches and subsoil depth ranges from 12 to 48 inches. Surface rock fragments range from 0 to 20%.
- 68** – well drained soil with moderate permeability. Gravelly loam with soil depth from 18 to 36 inches. Gravel and cobble content increased with depth and ranges from 20 to 50%. Occurs on south facing upland flats and sideslopes with gradients less than 50%
- 71** – Upland soil that occurs on flats with slopes less than 30%. A well-drained loam to gravelly loam surface with moderate permeability and a gravelly to cobbly clay loam subsoil. Gravel and cobble content ranges from 20 to 50% and increases with depth. Soil depth ranges from 12 to 14 inches. Surface rock fragments range from 30 to 50%.
- 74** – Upland flats with slopes < 30%. Excessively drained gravelly and cobbly loam soil with moderate permeability. 30 to 50% platy gravel and cobble by volume, 10 – 15" deep. Surface rock fragments range from 40 to 60%. Rhyolite.

A summary of soil characteristics in and near the Loco Project area (SRI, 1974).

Soil Map Unit	Surface Erosion Potential	Compaction Potential	Displacement Potential	Fuddling Potential	Natural Stability	Texture	Hydrologic Group
1	M	M	H	L	S	silt loam	A
3	L-H	M	H	L	VS	grav loam silt loam	D-A
32	L-M	M	H	L	S	var/silt loam	B
33	L-H	M	H	L	S	silt loam/grav loam	B
35	L	M	H	L	VS	var	A
36	M-H	L-M	L-M	L	S	grav loam	B
37	L	M	H	L	MS-S	silt loam	C
41	L-M	M	H	L	VS	silt loam	A
42	L	M	H	L	S-MS	Silt loam	C
43	M	M	H	L	VS	Silt loam	B
44	L	M-H	L	L-H	VS	VAR	B
46	M-H	H	L	M-H	S-MS	Clay loam	B
48	L-M	M-H	L-M	L	VS	Grav loam	B
63	M	M	H	L	VS-S	Silt loam	A
65	L-M	M	H	L	VS-S	Silt loam	A
68	M	M	H	L	S	silt loam	A
71	L-M	L-H	L-M	L	VS	Loam	B-D
74	L-M	L-H	L-M	L	VS	Loam	B-D
75	L-M	M-H	L	L-H	VS	var	B-C
81	L-M	H	L	M-H	S-MS	Clay loam	D
82	L-H	M	H	L	S	silt loam/grav loam	B

No TMDLs have been set by the state of Oregon for streams within the project area

Upland soils on hill and ridge slopes generally consist of shallow, well-drained loam and gravelly loam. Soil in the upland flat areas is primarily silt-gravelly loam and gravelly clay loams. Riparian soils and mollisols tend to be thicker, well drained, very stable, and have moderately high infiltration rates. The majority of soils within the Loco project area tend to have moderately high infiltration and moderate permeability rates. Potential for displacement tends to be high among upland soils as well as riparian soils. Surface soil erosion hazard classes range from low to medium on the flats, and medium to high on the slopes (SRI, 1974).

Direct and Indirect Effects: Operating heavy machinery on steep slopes or on soils with a high potential for displacement or erosion may have negative impacts on soil resources. Thinning overstocked stands reduces interception and evapotranspiration while increasing snow accumulation, infiltration and flow duration. Thinning and hauling may increase sedimentation and peak flows. Due to design criteria, and R6 BMP's, percent of soil disturbance/compaction would be minimal. Design features would limit the overall detrimental soil impacts from grapple piling machinery and for ground-based activities within the proposed units to less than 1%. It is unlikely that these limited impacts would lead to soil erosion and a reduction in water quality or aquatic habitat (sedimentation).

Although some thinning activities would occur on the boundaries of RHCAs, no direct effects to streams would occur due to riparian buffers of 50' (category 4 streams) or 150'-300' (category 2 and 1 streams respectively) on each side of the stream channel. Due to the riparian buffers there would be no significant loss to stream shade.

Timber sale administrators would monitor effects to soils and cease operations if impacts are determined to be excessive. Detrimental soil impacts would be monitoring on all harvest units. If impacts exceed forest plan standards, mitigation would occur.

Cumulative Effects: This project overlaps spatially and temporally with portions of the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA. Previous analysis has shown that It would reduce both hazardous fuels and the risk or extent of insect and disease infestation. Fuel reduction, haul, and low-level prescribed burning may occur on RHCA's boundaries. However previous analysis of the area has shown that there will be no cumulative damage to streams due to riparian buffers. Slight soil disturbance may occur due to machinery use on steep slopes that have a high potential for displacement or erosion and may have negative impacts on soil resources. However, cumulative effects will not exceed forest plan standards due to the use of project criteria recommendations and mitigation measures.

MITIGATION MEASURES: Soil monitoring would occur during implementation to ensure Forest Plan Standards for detrimental soil conditions are not exceeded. If Forest Plan standards are exceeded mitigation would include one or both of the following: (1) deep subsoiling of heavily compacted skid trails/landings, using subsoiler attachment on a tracked excavator or similar equipment to fracture and loosen compacted soil layers to re-establish water infiltration and deep root penetration; and (2) scarification (ripping) of disturbed soil areas using standard rippers or similar equipment, to superficially cultivate the surface to promote herbaceous re-vegetation.

Signature

Jana A. Krauss

Date 02/28/2020

RANGE:

The project occurs in the Crooked Creek, Myrtle, Silvies and Big Sagehen allotments, with most of the treatment taking place in the Silvies and Big Sagehen allotments. Effects from vegetation treatments will benefit range resources, by increasing forage where stand densities are decreased.

The proposed Loco Wildfire Resiliency Project in conjunction with the Flat Vegetation Management Project and Silvies Canyon Watershed Restoration Project would cumulatively reduce both hazardous fuels and the risk or extent of insect and disease infestation. Fuel reduction, haul, and low-level prescribed burning will displace livestock in and around project areas during the grazing season. However, effects of displacement will be short term with no cumulative damage to range resources.

MITIGATION MEASURES NEEDED:

When possible, trees should be felled away from range fences. If fences are cut, repairs need to be completed by end of workday if livestock are present. If livestock are not present, repairs are to be completed before leaving project area. Created slash should be removed from an area at least 6 feet wide on each side of the fence lines.

Signature *Christina Tinsley*

Date 02/12/2020

SILVICULTURE:

Existing Conditions:

The Loco project area is characterized entirely by warm dry or hot dry upland conifer forest. This area was characterized by frequent low intensity to moderate intensity wildfires that kept these stands at a more resilient stocking as well as kept the mid and late seral species such as Douglas-fir and grand fir from becoming a large component of the stand. Thus, favoring the more fire resilient and drought resilient ponderosa pine (Hessberg, 2016).

Currently the project area is overstocked. As well the historical species composition has been altered over time due to the impacts of past management and the suppression of wildfire (Merschel, 2014). The project area has twice the basal area per acre as would be considered broadly beetle resilient. On average, stands are at 75% of full stocking or more with the majority of the stands being above the competition induced mortality threshold (Powell, 1999) (Cochran, 1993). As well stands in this dense of stocking have a more continuous vertical and horizontal fuel profile, adding an increased risk of catastrophic wildfire. This results in the trees onsite already being stressed due to stand level competition for resources, making them more susceptible to insect and disease outbreaks and resultant mortality.

There is extensive mortality from insects within these stands as a result of the extensive drought that ended in 2016 and the high density stressing the trees. This has caused much larger than normal impacts from the outbreak of both western pine beetle and Douglas-fir Tussock moth. Primarily driven by the very high stand densities already stressing the trees, as well as the cumulative stress from the drought, the insects were able to successfully kill more trees than would have been expected under more historic conditions. This has caused a large pulse of dead standing trees within these stands which into the future pose a risk to the remaining live trees with respect to both prescribed fire and wildfire.

It has been shown that large snag densities, once fallen to the forest floor pose a large risk into the future of the stand to its resistance and resilience to fire. The fallen snags greatly increase the fuel loading on the forest floor, increasing the resonance time and duration of exposure to the existing stand. As well as increasing the risk of catastrophic fire effects due to the increased fuel loading on the ground (Peterson, 2015).

The project area continues to be at high risk of impacts of western pine beetle because stands are overstocked. The Regional Forest Health Insect and disease data shows the increase in beetle activity from year to year in the area. With 2019 showing another big growth in beetle mortality locations when compared to the 2018 Insect and disease data.

Douglas-fir tussock moth has had a large impact on the project area. Although the tussock moth, a defoliator, is generally seen to not cause direct mortality, the areas of defoliation experienced much higher mortality than traditionally seen. Some of this is due to past management practices and the exclusion of wildfire from the landscape altering the historic species composition of the project area (Merschel, 2014). The grand fir and Douglas-fir in the project area are already growing in areas that historically would have been primarily pure pine. These species of trees, growing out of their normal niches on the landscape, were already more moisture stressed than they would have been in their historical landscape positions. The extended drought of 2016, as well as overstocking, and species growing on dryer sites than their normal niche has led to much higher mortality in these species due to the multiple stressors these trees were being affected by. This has cumulatively, with the western pine beetle caused extensive mortality and has left the area now a fuels risk going into the future as these dead trees fall to the forest floor, creating a fire risk to the trees that remained alive through the outbreak (Peterson, 2015).

Desired Conditions:

The desired future condition would be to return these stands to a more resilient stocking level based on Powell's guidelines. Returning these stands to a stocking that is closer to the lower limit of the management zone, would result in a more fire resilient stand, as well as mitigate tree density in respect to insect outbreaks. Removing the dead trees that resulted from the insect outbreaks would reduce the large fuel loading into the future that results from these trees falling over time. Removing excess snags has been shown to decrease heavy fuel loads for up to 40 years post disturbance, creating a more fire resistant and resilient stand into the future (Peterson, 2015). Decreasing the stocking levels to sustainable levels, removing the dead component from the stand to mitigate

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fuel loading, and moving the species composition back to more historic levels will increase the project areas ability to maintain vigor and resist or be resilient to fire. It will also mitigate the threat to the residual stand of increased mortality due to fire within the project area by removing the heavy fuel component.

Direct and Indirect Effects:

The Loco CE would mitigate the hazardous fuel loading of all size classes of fuel on 2,832 acres. Commercial thinning from below (no tree cut over 21" DBH) and precommercial thinning would reduce stocking levels creating more growing space for residual trees and breaking up the horizontal and vertical connectivity of the live fuel profile. Removing the insect caused mortality in the beetle epicenters and Douglas-fir tussock moth areas will protect the residual stand into the future from an overloading of heavy fuels on the forest floor from the larger snags falling over time. This will ensure if a surface fire or prescribed fire impacts the area that the residual stand will remain resistant and resilient to mortality from surface fire. Additionally, altering the horizontal and vertical continuity of the live fuel profile will mitigate the risk of catastrophic wildfire, sustained crown fire, and independent crown fire. The results of this can be seen in the increase in canopy base height from 7 feet currently to the lowest live branch, to 17 feet in canopy base height after implementation.

The treatment directly addresses the emerging fuel loading issues within the project area. However it also creates a much healthier stand in respect to future insect impacts and stand structure. The proposed action moves the average basal area across the project back into levels considered beetle resilient, with over 50% of the stands lower than the beetle activity threshold. This results in a much longer timeframe that these acres remain resistant and resilient to beetles as they have ample growing space to utilize and increased tree vigor as a result.

With respect to historic range of variability the project moves these stands much closer to a historic distribution of stand structures than no action, promoting and increasing the amount of old forest structure within the project area. Currently there are 380 acres classified in old forest structure classes. Immediately after implementation the proposed action results in an increase in old forest multi-strata by 290 acres while maintaining all acres of existing old forest single strata. When modeled into the future 50 years the proposed action results in 1,993 acres of old forest structure where the no action alternative results in only 465 acres being considered old forest structure and a loss of old forest single strata of 150 acres. All LOS stands that are treated remain in LOS status and all are enhanced and improved by this treatment.

Cumulative Effects:

This project overlaps spatially and temporally with portions of the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA. These projects will have positive cumulative effects on the surrounding areas as fuel loading and catastrophic fire risk is reduced through density management, harvest of standing dead trees, and prescribed burning. As well the risk of beetle infestation to the surrounding area will be greatly reduced as the density is returned in a broad sense back to beetle resilient levels, which will slow or stop the spread of western pine beetle epicenters and keep the threat of beetles to neighboring stands lower through time than the no action alternative.

MITIGATION MEASURES NEEDED:

Refer to the project design criteria in the project record.

Signature *Matt Cawfield*

Date 02/20/2020

TIMBER/LOGGING SYSTEMS:

The social and economic effects of the proposed project was assessed in terms of viability of harvestable timber, employment supported, and income provided. The measurement indicators (1) viability of harvest, (2) employment and income, and (3) economic efficiency are used for assessing the economic effects of the Loco CE project and are detailed in the table below. Only the viability of commercial harvest was analyzed for those units that have a commercial component. The computer program, TEA_ECON, was used to estimate the sale revenues based upon the estimated tentative advertised bid rates per hundred cubic feet (\$/ccf) for the commercial acres of the proposed action. These bid rates indicated the economic viability of harvesting timber. The estimates of these bid rates were based on the most current estimates of (1) estimated volume per acre, and species composition

Cumulative Effects: There are foreseeable projects in Harney and Grant counties in various stages of planning that potentially may add to the Forest's annual timber offerings for 2020. These ongoing and foreseeable projects are expected to add cumulatively to the employment and income of Grant and Harney counties during the life of the Loco Project.

Measure	Alternative 1
Timber volume (ccf)	16,992
Acres by harvest method	
Ground based	2,832
Total acres	2,832
Total present value benefits	
Average bid price (\$/ccf)	1.26
Discounted revenues (\$)	20,630
Discounted cost (\$)	438,615
Present net value (\$)	-417,986
Present net value/acre (\$)	-147
Total present value costs	
FS prep and administration (\$/ccf)	25.81
Stump to truck (\$)	85.41
Log haul (\$)	51.38
Brush disposal (\$3/ccf)	50,976
Road maintenance/Erosion control (\$1/ccf)	16,992
Temporary roads (miles)	1.84
Employment	
Direct	96
Indirect jobs	58
Total jobs	154
Income	
Direct (\$)	\$2,674,541

MITIGATION MEASURES NEEDED:

Refer to the project design criteria in the project record.

Signature *Krystal Prophet*

Date 02/13/2020

FUELS/AIR QUALITY:

Harvest-generated logging slash would either be removed to the landing through whole tree yarding or if cut-to-length logging methods are used, machine and/or hand piled and burned in the unit. Activity slash would be treated to the extent that no more than 12 tons/acre of surface fuel loading would remain in any treatment unit. Pile burning will occur when piles have sufficiently cured, and all smoke management requirements can be adhered to.

The fire return interval for Dry Upland Forest is commonly accepted to be between 12 and 20 years (Heyerdahl and Agee 1996, Johnston et al. 2017). Forested stands in the Loco project area have missed several fire cycles based on the known fire return intervals and many of these stands would not burn as a low severity surface fire. Tree densities are much higher and species composition has shifted to have a higher proportion of shade tolerant, fire susceptible fir. Insects and disease are also contributing to tree mortality in the area which contributes to surface fuel loading as trees fall to the ground.

Fire Regime Condition Class: A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention but including the influence of aboriginal burning (Agee 1993). Coarse scale definitions for natural (historical) fire regimes have been developed and interpreted for fire and fuels management and mapped in GIS. Fire regimes have been identified for all plant associations occurring across the Blue Mountains. A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime. Determination of amount of departure is based on comparison of a composite measure of fire regime attributes (vegetation characteristics; fuel composition; fire frequency, severity and pattern) to the central tendency of the natural (historical) fire regime. The amount of departure is then classified to determine the fire regime condition class. The Loco project area is characterized entirely by warm dry or hot dry upland conifer forest. The appropriate scale at which to evaluate fire regimes and ecological departure for FRCC determination (Hann et al. 2003) is at the landscape scale. Nevertheless, approximately 95% of the Loco project area is within fire regime 1, condition classes 2 and 3.

Projects authorized under Title VI of the Healthy Forests Restoration Act of 2003 (HFRA) (16 U.S.C. 6591 et seq.) Section 605 shall be prioritized within the wildland-urban interface (WUI); if the project area is outside a WUI, projects are limited to areas within condition classes 2 or 3 in fire regime groups I, II, or III that contain very high wildfire hazard potential. Approximately 64% of the Loco project area is within a wildland-urban interface as defined in the Harney County Community Wildfire Projection Plan (2013). Also as stated above, 95% of the Loco project area is within fire regime 1, condition classes 2 (15%) and 3 (80%). The remaining 5% of the Loco project area is within fire regime 3, condition class 1.

Direct and Indirect Effects: Modifying forest fuels so that wildfires can burn within the natural range of variability for a particular fire regime and without creating unacceptable social-ecological hazards is an important ecological restoration objective for many fire-prone forests (Allen et al., 2002; Reinhardt et al., 2008). The Loco project would reduce the amount of live and dead standing fuels on about 2,832 acres. Treatments would change vegetation characteristics including stand density, species composition, and structural stage. Treatments would also change fuel composition and potential fire severity components relating to change from reference conditions. Crown or canopy fuels and ladder fuels would be treated by commercial harvest, salvage, and non-commercial thinning. Canopy base height would be increased from 7 feet to the lowest live branch, to 17 feet after implementation. There would be a short-term (1-5 years) increase in fire hazard following treatment, prior to slash disposal when fuels remain in the units and on the ground. Surface fuel loading greater than 12 tons/acre would be treated by hand or mechanical piling followed by burning of the piles. These treatments would alter the horizontal and vertical continuity of live and dead fuel profile and mitigate the risk of catastrophic wildfire, sustained crown fire, and independent crown fire.

Pile burning under the Loco project would follow the guidance provided by the Oregon Smoke Management Plan. There would be short-term effects to communities and residences downwind and in drainages adjacent to pile burning. There would also be short-term effects along highway 395 south, county roads in or adjacent to the project area, and local forest roads in or adjacent to the project area. All prescribed burning would comply with applicable federal, state, and local air quality regulations.

Cumulative Effects: This project overlaps spatially and temporally with portions of the Silvies Canyon Watershed Restoration EIS and the Flat Vegetation Management EA. Landscape scale prescribed fire authorized under Silvies and Flat would promote long-term forest sustainability that would closely represent historic conditions. One goal is to reestablish fire regimes near historical cycles to reduce the risk of catastrophic crown fires. Prescribed fire will reduce fuel loading 2 to 10 tons per acre with moderate to light burning and reduce seedling and sapling size trees by 60 to 80%. Loco project would remove the heavy standing fuel (live and dead) component on 2,832 acres allowing for prescribed fire objectives to be met in a shorter duration, with reduced cost, and provide a safer work environment due to less exposure to hazards. With removing the heavy standing fuel load, it will also provide for a lower intensity underburn that will better allow for the protection of old growth ponderosa pine. Cram et al. (2006) observed that mechanical treatment followed by prescribed fire (including pile burning) had the greatest influence toward mitigating fire severity.

The spatial extent of the air shed considered for cumulative effects analysis would be all forestland managed by a federal land management agency statewide because burning on National Forest System Lands requires prior approval granted by the Oregon Department of Forestry (ODF). The Oregon Smoke Management Plan (OSMP) is intended to minimize smoke impacts by conducting forest burning under weather conditions that disperse smoke and vent it away from populated areas. Emissions produced from pile burning Loco units would not exceed air quality standards. There is potential for prescribed burning to occur at the same time in nearby project areas including Silvies, Flat and Marshall Devine project areas. Total emissions produced from concurrent projects from National Forest System lands would meet air quality standards. It is likely that only a few projects, in isolated areas, would undergo burning at the same time. The dilution of smoke over time and space from concurrent burning would limit the cumulative effects. All burning would be coordinated to reduce cumulative effects and meet all applicable laws and regulations. Therefore, the cumulative effects of multiple prescribed burning projects would not cause air quality to exceed standards.

Conflicting Science: There is conflicting science on how harvest of dead trees (salvage) affects surface woody fuels and fire risk. Most of the literature describes salvage logging after a severe wildfire. The Loco project proposes harvesting dead trees (snags) following several years of insect mortality due to Douglas-fir tussock moth and bark beetles. Generally, one can infer the effects of salvage logging after an insect outbreak and the effects of salvage logging after a wildfire are similar on surface woody fuels and fire risk, but less magnitude since insect mortality is concentrated into smaller scattered epicenters rather than large swaths of dead trees. Donato et al. (2006) reported increased fire risk as a consequence of increased downed woody fuels. M. Newton et al. (2006) argues that Donato et al. (2006) lacks adequate context and supporting information to be clearly interpreted by scientists, resource managers, policy-makers, and the public. Donato presented data on fuel loads after the Biscuit Fire and reported increased "fire risk" as a consequence of increased downed woody fuels. M. Newton et al. purports "*they did not describe fuel continuity, a major factor contributing to fire behavior, nor did they present approximate differences in projected fire behavior, which can be determined using standard fire models. After the Biscuit Fire, management directives specifically included leaving logging slash for soil protection and wildlife habitat in areas deficient in downed wood as a function of plant association, topographic aspect, and fire intensity (USDA Forest Service. 2004)*".

Peterson et al. (2015) describes how pulses of dead trees can influence future fuel loads, fire behavior, and fire effects as they decay and deposit surface woody fuel. His study suggests that "*post-fire logging can significantly reduce future surface woody fuel levels... The magnitude of woody fuel reduction depends, however, on the volume and sizes of wood removed, logging methods, post-logging fuel treatments, and the amount of coarse woody debris left on-site to support wildlife habitat, erosion control, and other competing management objectives*". Specifically, Peterson et. al. states, "*Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up to 53 Mg/ha between 6 and 39 years after wildfire, reducing medium diameter fuel loads by up to 2.4 Mg/ha between 12 and 23 years after wildfire, and reducing small diameter fuel loads by up to 1.4 Mg/ha between 10 and 28 years after wildfire. Logging also reduced rotten, large diameter fuel loads by up to 24 Mg/ha between 20 and 39 years after wildfire.*"

As stated above, the Loco project would have short-term (1-5 years) increase in fire hazard following treatment and prior to slash disposal when fuels remain in the units and on the ground. However, after activity slash is

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treated, the risk will be reduced. Additionally, after the area is treated with prescribed fire as described above in cumulative effects, the risk will be even further reduced.

MITIGATION MEASURES NEEDED:

Operator shall comply with all applicable Federal and State fire laws and regulations and shall take all reasonable measures to prevent and suppress fires on the area of operations and shall require employees, contractors and subcontractors to do likewise. All IFPL requirements and tooling (fire) is required. Equipment will have approved spark arrestors.

Follow Smoke Management Policy during burn operations

Signature /s/ *J. Ryan Hussey*

Date 3/19/2020

ENGINEERING/TRANSPORTATION:

Roads used for timber haul would be maintained to the same specifications and standards used for timber sales or Stewardship contracts. All haul routes have been identified in GIS.

About 80 miles of road would be used for haul. About 12 miles of road are maintenance level 1 or closed roads. These roads would be opened for haul and then reclosed when haul is complete. Because roads would be maintained, the direct and indirect effects to roads would be positive. No roads would be closed under this project so there would be no change in the number of miles of open roads.

Cumulative effects to roads from the Silvies and Flat projects would also be positive as all roads used would be maintained.

MITIGATION MEASURES NEEDED:

When using roads for hauling material the roads should be maintained to the same specifications and standards use for a timber sale or Stewardship contract. Will conform to the 2009 road rules and engineering would put together the maintenance packages or road use permits covering any commercial haul on the roads.

Signature *Scott Officer*

Date 02/25/2020

RECREATION/VISUALS:

Developed Recreation

There are no developed recreation facilities located within the project area is. Therefore, there would be no impacts.

Dispersed Recreation

There are no known dispersed recreation sites within the proposed units however dispersed camping may take place within the project area. Activities may impact dispersed recreationists if they are present during implementation. The sights and sounds of thinning would be apparent but limited in magnitude to less than 3000 acres and 1 or two operating seasons. Impacts would be cumulative with the Silvies EIS and Flat EA projects.

Wilderness Areas

There are no wilderness areas within the project area; therefore, there would be no direct, indirect or cumulative effects to wilderness areas.

Areas with Wilderness Characteristics

There are no areas with wilderness characteristics or MA 1B areas within the project area; therefore, there would be no direct, indirect or cumulative effects to these areas.

Inventoried Roadless Areas

There are no Inventoried Roadless areas within the proposed units. The Myrtle-Silvies Roadless area is adjacent to one unit but there are no activities proposed within the IRA therefore, there would be no direct, indirect or cumulative effects to inventoried roadless areas.

Wild and Scenic Rivers

There are no designated Wild & Scenic rivers (WSR) within the project area; therefore, there would be no direct, indirect or cumulative effects to wild and scenic rivers.

Research Natural Areas

There are no research natural areas within the project area; therefore, there would be no direct, indirect or cumulative effects to research natural areas.

Scenic Areas

There are no scenic areas within the project area; therefore, there would be no direct, indirect or cumulative effects to scenic areas.

Visual Corridors

290 acres of visual corridors or MA 14 middleground within the project area would be treated to reduce hazardous fuels. The project would meet Forest Plan objectives of managing to a moderate scenic integrity objective in the middleground because proposed activities would not substantially alter the tree canopy densities (no large openings would be created). Travelers along Highway 395 should not notice any changes to the landscape. The likelihood for any dramatic changes from a wildfire would also be greatly reduced. Impacts would be cumulative with the Silvies EIS and Flat EA projects.

Other Undeveloped Areas

Areas with undeveloped character include acres of land that have no history of harvest activity and do not contain open forest roads, are not inventoried roadless areas, are not a designated wilderness area and are not areas with wilderness potential. They are stand-alone polygons of varying acreages all less than or equal to 4,999 acres within the project planning area. These areas are "undeveloped", but they do NOT have wilderness potential.

There are no Forest-wide or management area standards specific to undeveloped lands in the Malheur Forest Plan. All lands, including undeveloped lands, are managed consistent with Forest-wide standards and guidelines and by designated Forest Plan management area allocations. Current forest plan management areas within the project area include: MA-1/2 General Forest/Range, MA-4A Big Game Winter Range, and MA-14M Visuals- Middleground.

Any areas with unique ecological values within the project area are currently maintained for those values with Forest Plan standards and guidelines for management area allocations such as, MA-4A Big Game Winter Range, MA-14M Visuals- Middleground and riparian habitat conservation areas. Refer to the Forest Plan for brief descriptions of goals associated with each management area allocation.

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No special or unique resource values in undeveloped lands have been identified by project resource specialists. However, resources are present in these other undeveloped lands such as, soils, water quality, vegetation, fuels, air quality; plant and animal communities, habitat for threatened, endangered, and sensitive species; noxious weeds, scenery, and cultural resources. The affected environment for each of these resources is the same as disclosed in previous sections of this document and not reiterated here.

The Undeveloped area maps included in the project file show that many of these areas contain closed roads. Additionally, because our GIS data only goes back to about the 1980's, and it is well known that the entire former Burns Ranger District was included in a timber sale for the Edward Hines Lumber Company, many of these areas contain evidence of previous harvest like large stumps. There is no special or unique resource values identified in these undeveloped lands. These areas do not have high quality or undisturbed soil, water or air, they are not sources of public drinking water, do not contain a diversity of plant and animal communities, are not habitat for threatened, endangered, proposed or candidate species, do not contain primitive, or semi-primitive non-motorized classes of dispersed recreation, are not reference landscapes, are not natural appearing landscapes with high scenic quality, have no other locally identified unique characteristics.

Other undeveloped areas were analyzed in the Loco project area. There is one identified undeveloped area greater than 1000 acres that overlaps within the Loco project area. This polygon is 3,070 acres. Under the Loco Project, four hundred eighteen (418) acres of thinning are proposed within this undeveloped area. After treatment this undeveloped polygon areas would still be greater than 1,000 acres (2,652 acres). The Loco project would reduce the acres of undeveloped areas by 418 acres.

Impacts would be cumulative with the Flat EA project which also harvested a portion of this undeveloped area which was 3,122 acres. The Flat project reduced this polygon to 3,070 acres. So cumulatively, this undeveloped area has been reduced by 470 acres.

MITIGATION MEASURES NEEDED: None needed

Signature *Lori Bailey*

Date 02/19/2020

RESOURCE PLANNING/NEPA:

The coordination process meets NEPA requirements, documentation and decision document meets requirements.

Environmental Justice

Executive order 12898 on environmental justice requires that federal agencies identify and address any disproportionately high and adverse human health or environmental effects on minority and low income populations. In this assessment, American Indians, and low income populations in Harney County were identified as potential environmental justice populations. There is no quantifiable information on how much use the area receives from these populations other than the information shared by the Burns Paiute Tribe which is not specific to this area. The anticipated direct and indirect social effects to low income populations in Harney County are primarily a positive impact on employment opportunities and income. However, the distribution of economic impacts would depend on the location of the timber purchaser who is awarded the contracts, the availability of equipment and skills in the economic impact zone, and the location and availability of wood processing facilities and related infrastructure.

Global Climate Change Prevention Act (7 USC 6701)

The Global Climate Change Prevention Act (7 USC 6701) authorizes and directs the Secretary of Agriculture to take steps towards researching climate change, including establishing a Global Climate Change Program; a technical advisory committee; an Office of International Forestry; urban forestry demonstration projects; biomass energy demonstration projects. The Secretary is also directed to study the effects of global climate change on agriculture and forestry, and the interaction between forest greenhouse gas emissions and climate change.

Section 6701 of the Act directs the Secretary of Agriculture to establish a Global Climate Change Program in order to have within the Department of Agriculture a focal point for coordinating all issues of climate change. The Secretary must designate a director, who shall coordinate policy analysis, long range planning research, and response strategies relating to climate change issues; provide liaison with other federal agencies, through the Office of Science and Technology Policy, regarding issues of climate change; perform other enumerated duties. The specific list of Director tasks include:

The Director shall:

- 1) Coordinate policy analysis, long range planning, research, and response strategies relating to climate change issues
- 2) Provide liaison with other Federal agencies, through the Office of Science and Technology Policy, regarding issues of climate change
- 3) Inform the Department of scientific developments and policy issues relating to the effects of climate change on agriculture and forestry, including broader issues that affect the impact of climate change on the farms and forests of the United States
- 4) Recommend to the Secretary alternative courses of action with which to respond to such scientific developments and policy issues
- 5) Ensure that recognition of the potential for climate change is fully integrated into the research, planning, and decision-making processes of the Department

Item #5 notes that the Secretary should ensure that the potential for climate change is noted in planning and decision processes of the Department, but nothing in the Act directs the Forest Service to conduct any specific analysis or disclose any specific effects in a NEPA document for specific forestry projects. However, the Forest Service has looked at what modeling of climate change is possible in planning projects. In a recent analysis, three Forest Service research scientists considered a methodology for modeling climate change in forest planning. In a letter to Lisa Freedman, Director of Resource Planning and Monitoring for the Pacific Northwest Region of the Forest Service, Pacific Northwest Research Station Deputy Director Cynthia West stated, "...the science of modeling climate change lacks certainty due to large spatial and temporal variation in the interactions of terrestrial, atmospheric, oceanic and human systems..." 4070 Letter of July 26, 2005 from Cynthia West. In a follow-up policy letter, Ms. Freedman concluded, "...there is no consensus or experience regarding how to model climate change at the subregional scale and it would require substantial research, model development and testing to provide such an approach."

The proposed activities in the Loco project would treat less than 3,000 acres of forested stands with the use of commercial and non-commercial biomass removal activities. Therefore, the Loco project has the potential to treat less than 1% of the Malheur National Forest, and 0.2% of forest land in the U.S. This scope and degree of change would be minor relative to the amount of forested land being treated as a whole.

Climate change is a global phenomenon because major greenhouse gasses (GHG) mix well throughout the planet's lower atmosphere (IPCC 2013). Considering emissions of GHG in 2010 was estimated at 49 ± 4.5 gigatonnes globally (IPCC 2014) and 6.9 gigatonnes nationally (US EPA, 2015), a project of this magnitude makes an infinitesimal contribution to overall emissions. Therefore, at the global and national scales, this proposed action's direct and indirect contribution to greenhouse gasses and climate change would be negligible. In addition, because the direct and indirect effects would be negligible, the proposed action's contribution to cumulative effects on greenhouse gasses and climate change would also be negligible.

The Intergovernmental Panel on Climate Change has summarized the contributions to climate change of global human activity sectors in its Fifth Assessment Report (IPCC 2014). In 2010, anthropogenic (human-caused) contributors to greenhouse gas emissions came from several sectors:

- Industry, transportation, and building – 41%
- Energy production – 35%
- Agriculture – 12%.
- Forestry and other land uses – 12%

There is agreement that the forestry sector contribution has declined over the last decade (IPCC, 2014; Smith et al., 2014; FAOSTAT, 2013). The main activity in this sector associated with GHG emissions is deforestation, which is defined as removal of all trees, most notably the conversion of forest and grassland into agricultural land or developed landscapes (IPCC 2000).

The Loco project does not fall within any of these main contributors of greenhouse gas emissions. Forested land will not be converted into a developed or agricultural condition. In

fact, forest stands are being retained and thinned to maintain a vigorous condition that supports trees, and sequesters carbon long-term. US forests sequestered 757.1 megatonnes of carbon dioxide after accounting for emissions from fires and soils in 2010 (US EPA, 2015). However there is growing concern over the impacts of climate change on US forests and their current status as a carbon sink. There is strong evidence of a relationship between increasing temperatures and large tree mortality events in forests of the western US. There is widespread recognition that climate change is increasing the size and frequency of droughts, fires, and insect/disease outbreaks, which will have major effect on these forests' role in the carbon cycle (Joyce et al. 2014).

The Loco project is in line with the suggested practice of reducing forest disturbance effects found in the National Climate Assessment for public and private forests (Joyce et al. 2014). Here specifically, the project proposes to reduce stand densities to reduce the risk or extent of, or increase the resilience to, insect (bark beetle) infestation in order to maximize the retention of old-growth and large trees. The release of carbon associated with this project is justified given the overall change in condition increases forest resistance to release of much greater quantities of carbon from wildfire, drought, insects/disease, or a combination of these disturbance types (Millar et al. 2007). This project falls within the types of options presented by the IPCC for minimizing the impacts of climate change on forest carbon, and represents a potential synergy between adaptation measures and mitigation. Actions aimed at enhancing forest resilience to climate change by reducing the potential for large-scale, catastrophic disturbances such as wildfire also prevents release of GHG and enhances carbon stocks (Smith et al. 2014). The proposed action reflects the rationale behind these recommendations because it moves stand densities and compositions towards the historic range of variability, reduces long term wildfire risk through reductions in existing fuel loading, and restores ecological function in fire-adapted ecosystems.

Timber management projects can influence carbon dioxide sequestration in four main ways: (1) by increasing new forests (afforestation), (2) by avoiding their damage or destruction (avoided deforestation), (3) by manipulating existing forest cover (managed forests), and (4) through transferring carbon from the live biomass to the harvested wood product carbon pool. Land-use changes, specifically deforestation and regrowth, are by far the biggest factors on a global scale in forests' role as sources or sinks of carbon dioxide, respectively (IPCC, Intergovernmental Panel on Climate Change, 2000). Projects like the Loco Project that improve forest conditions and capacity to grow trees are positive factors in carbon sequestration.

REFER TO CE CATEGORY Section 605 of HFRA (16 U.S.C.6591d) Wildfire Resilience - The Consolidated Appropriations Act of 2018 (Public Law 115-171) amended Title VI of the Healthy Forests Restoration Act of 2003 (HFRA) (16 U.S.C. 6591 et seq.) to add Section 605. Section 605 establishes a categorical exclusion for hazardous fuels reduction projects in designated areas on National Forest System lands.

Signature *Lori Bailey*

Date 02/19/2020

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